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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,437	07/09/2003	Hans F. van Rietschote	5760-12200	9169

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EXAMINER

TRUONG, CAMQUY

ART UNIT	PAPER NUMBER
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2195

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/616,437

Applicant(s)

VAN RIETSCHOTE ET AL.

Examiner

Camquy Truong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/22/03, 10/31/03, 3/8/04, 4/19/04, 8/23/04, 1/9/04, 1/21/05, 4/4/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-33 are presented for examination.
2. It is noted that although the present application does contain line numbers in the specification and claims, the line numbers in the claims do not correspond to the preferred format. The preferred format is to number each line of every claim, with each claim beginning with line 1. For ease of reference by both the examiner and Applicant all future correspondence should include the recommended line numbering.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 14- 25 and 23-33 are rejected under 35 U.S.C. 101 because they are directed to non-statutory subject matter.
4. Claims 14 is directed to method steps, which can be practiced mentally in conjunction with pen and paper, therefore they are directed to non-statutory subject matter. Specifically, as claimed, it is uncertain what performs each of the claimed method steps. Moreover, each of the claimed steps, scheduling, detecting and migrating can be practiced mentally in conjunctions with pen and paper. The claimed steps do not

define a machine or computer implemented process (see MPEP 21061). Therefore, the claimed invention is directed to non-statutory subject matter.

5. As to claims 23-33 recites " a carrier medium" (line 1) and the specification discloses carrier medium as including transmission media or signals such as electrical, electromagnetic, or digital signals (page 19, lines 4-7). Transmission media or signals such as electrical, electromagnetic, or digital signals are incapable of being touched or perceived absent the tangible medium through which they are conveyed; therefore, claims 22-33 is non-statutory.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

7. Claims 1-33 are rejected under 35 U.S.C 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following terms lack proper antecedent basis:

i. The target load programmed – claims 7 and 30.

B. As to claims 1, 14 and 23, it is not clearly understood how " a first virtual machine " migrates to the second computer (i.e. virtual machine image migrate to the second computer).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-11 and 13--33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Saito et al. (U.S. Patent 6,578,064 B1).

10. As to claim 1, AAPA teaches the invention substantially as claimed including: a cluster comprising a plurality of computer systems, wherein each of the plurality of computer systems is configured to execute one or more virtual machines, each of the plurality of computer systems comprising hardware (page 1, lines 10- 16 ), migrates at least a first virtual machine executing on the first computer system to the second computer system responsive to detecting the failure of the virtual machine (page 1, lines 17- 21).

11. AAPA does not explicitly teach a plurality of instructions when executed on the hardware (col. 13, lines 36-39), detects that a first load of a first computer system of the plurality of computer systems exceeds a second load of a second computer system of the plurality of computer systems. However, Saito teaches when executed on the hardware, detects that a first load of a first computer system of the plurality of computer

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systems exceeds a second load of a second computer system of the plurality of computer systems (col. 24, lines 28-33).

12. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of AAPA and Saito because Saito's when executed on the hardware, detects that a first load of a first computer system of the plurality of computer systems exceeds a second load of a second computer system of the plurality of computer systems would improve the efficiency of AAPA's system by providing the step of detecting a first load of a first computer exceeds a second load of a second computer system to provide more accurately evaluated so that fully equal load distribution can be accomplished.

13. As to claim 2, AAPA teaches the first virtual machine executes on the second computer system independent of the first computer system, even if the first virtual machine was initially launched on the first computer system (page 1, lines 17-20).

14. As to claims 3-4, Saito teaches the plurality of instructions, when executed on the first computer system, select the second computer system to compare loads (col. 4, lines 18-22; col. 24, lines 38-49).

15. As to claim 5, AAPA teaches the first virtual machine has a corresponding load, among loads of the virtual machines executing on the first computer

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system (page 1, lines 23-29);

Saito teaches the computer has a corresponding load that is nearest, among other computer, to  $1/2$  the difference between the first load and the second load (col. 22, lines 26-47).

16. As to claims 6 -7, Saito teaches the corresponding load of a computer represents the actual load experienced in executing the computer (col. 24, lines 28-49; col. 25, lines 3-4).

17. As to claim 8, AAPA teaches the first virtual machine has a first corresponding load on the first computer system and a second corresponding load on the second computer system, and wherein the first corresponding load differs from the second corresponding load (page 1, lines 23-29),

Saito teaches wherein the first computer system is configured to transmit one or more load factors to the second computer system, and wherein the second computer system is configured to calculate the second corresponding load from the one or more load factors, and wherein the first computer system and the second computer system are configured to exchange the first corresponding load and the second corresponding load to select the first virtual machine for migration (col. 24, line 59 – col. 25, line 2).

18. As to claims 9 -10, Saito teaches the first computer has a corresponding load that is calculated as a weighted combination of measurements of usage of two or

more resources of the first computer system (col. 25, lines 37-41).

19. As to claim 11, Saito teaches the measurements of usage include an amount of input/output activity generated by the first virtual machine during execution (col. 25, lines 55-65).

20. As to claim 13, Saito teaches each of the plurality of computer systems include a schedule having a plurality of entries, each entry corresponding to program to be executed on the respective one of the plurality of computer systems (col. 11, lines 4-9), and wherein migrating the program comprises deleting the entry corresponding to the computer in the schedule of the first computer system and inserting the entry corresponding to the computer in the schedule of the second computer system (col. 11, lines 37-50; col. 41, lines 10-30; col. 15, lines 20-31; col. 23, lines 10-20).

21. As to claim 14, it is rejected for the same reason as claim 1. In addition, AAPA teaches scheduling one or more virtual machines for execution on hardware comprising a first computer system of a plurality of computer system (page 1, lines 10-16)

22. As to claim 15, it is rejected for the same reason as claim 2.

23. As to claim 16, it is rejected for the same reason as claims 2 and 14.



24. As to claim 17, it is rejected for the same reason as claim 4.

25. As to claim 18, it is rejected for the same reason as claim 4. In addition, Saito teaches comprising each of the plurality of computer systems periodically randomly selecting another one of the plurality of computer systems (col. 23, lines 25-37).

26. As to claim 19, it is rejected for the same reason as claim 5.

27. As to claim 20, it is rejected for the same reason as claim 8.

28. As to claim 21, it is rejected for the same reason as claim 9.

29. As to claim 22, it is rejected for the same reason as claim 13.

30. As to claim 23, it is rejected for the same reason as claim 14.

31. As to claim 24, it is rejected for the same reason as claim 1. In addition, AAPA teaches schedule the one or more virtual machines for execution on hardware comprising the first computer system (page 1, lines 10-16).

32. As to claim 25, it is rejected for the same reason as claim 2.

33. As to claim 26, it is rejected for the same reason as claim 3.
34. As to claim 27, it is rejected for the same reason as claim 4.
35. As to claim 28, it is rejected for the same reason as claim 5.
36. As to claim 29, it is rejected for the same reason as claim 6.
37. As to claim 30, it is rejected for the same reason as claims 6-7.
38. As to claim 31, it is rejected for the same reason as claim 8.
39. As to claim 32, it is rejected for the same reason as claim 9.
40. As to claim 33, it is rejected for the same reason as claim 13.
41. Claim 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Saito et al. (U.S. Patent 6,578,064 B1) as applied as claim 1 above, and further in view of Bodin et al (U.S. Patent 5,675,762).
42. AAPA and Saito do not explicitly teach the measurements of usage include an

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amount of memory occupied by the first virtual machine. However, Bodin teaches the measurements of usage include an amount of memory occupied by the first virtual machine (abstract; col. 2, lines 41-45).

43. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of AAPA, Saito and Bodin because Bodin's measurements of usage include an amount of memory occupied by the first virtual machine would improve the efficiency of AAPA and Saito's system by providing the step of measurements of usage include an amount of memory of the virtual machine to improve the data transfer between an application running in virtual mode.

### *Conclusion*

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (571) 272-3773. The examiner can normally be reached on 8:00Am – 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3756.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Camquy Truong

May 28, 2005



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